

NWIFC News

Northwest Indian Fisheries Commission

Summer 2005

www.nwifc.org

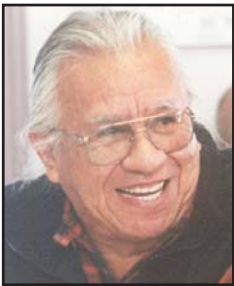


Inside:

- Drought Looms Over Hatcheries
- 'Lawn Darts' Aid Salmon Habitat
- Elk 'Alive & Kicking' After Transfer
- Tribal Hunters Clean Woods
- Volunteers Rediscover Coho
- Tagging Salmon Automatically

You're Stepping On Our Ancestors

By Billy Frank Jr.
Chairman



We live in a world abuzz with traffic and construction. Our land is bombarded by overcrowded roads, over-sized homes, unsightly buildings and herbicide-soaked golf courses. Thousands turn to millions turn to billions of footsteps hammering blindly on our homeland, and the plague of neglect promises only to get worse.

In a time when people should control their population and their impacts on dwindling resources, the cadence of growth pounds on. It pounds ever harder with each pass-

ing year and mindlessly erases the forests, prairies and rivers of our region before our very eyes.

Anyone surprised by our objection to the detriments of so-called western civilization must live in utter isolation. My forefathers raised concerns about it from the time of first contact. This is a land where people and villages have been trampled under the rolling wheels of merciless destiny by thundering hordes of immigrants half-crazed with dreams of riches. And beneath those very feet are the bones of my ancestors. You walk on their graves every day of your life.

An 1854 interpretation of Chief Seattle by the Seattle Sunday Star read, "The very dust under your feet responds more lovingly to our footsteps than to yours, because it is the ashes of our ancestors and our bare feet are conscious of the sympathetic touch, for the soil is rich with the life of our kindred."

As the bulldozers of progress dig ever deeper into the earth of the Pacific Northwest, they turn up skeletal remains along with soil and rock. Yet the lack of regard for these sacred bones should shock even the greediest of exploiters. It should sadden the most energetic developer and give pause to the least conscientious government official.

Yet the wheels roll on, and nobody really cares.

For the record, *I* care.

It tore at my heart when a construction company unearthed human remains a few short years ago at Semiahmoo near Blaine and shipped them out of state in apple boxes. And again, when the massive Tse-Whit-Zen Village was unearthed by the graving dock project near Port Angeles and local political leaders called for the desecration to continue to get a few new jobs.

For those who just can't understand why these things affect tribal members so deeply, try to imagine what you would feel if the final resting places of your wives, parents and brothers were suddenly and deliberately torn up and their bones sent to a museum to be put on display. It's the same for us. No matter how long our ancestors have been buried, it is profane to us for their resting places to be disturbed and trodden upon. It is the height of irreverence and disrespect. And it relates directly to the wanton destruction of other elements of our culture, such as the forests and the fish.

The resting places of our ancestors are everywhere, and so we plead with you to walk this land with great care and respect. And we ask local, state and federal government officials to take an active role in their protection. Pass meaningful laws to protect them, and enforce these laws to their full extent.

NWIFC News

NWIFC News is published quarterly on behalf of the treaty Indian tribes in western Washington by the Northwest Indian Fisheries Commission, 6730 Martin Way E., Olympia, WA 98516. Free subscriptions are available. Articles in *NWIFC News* may be reprinted.

NWIFC Member Tribes

Hoh	360-374-6582
Jamestown S'Klallam	360-683-1109
Lower Elwha Klallam	360-452-8471
Lummi	360-384-2210
Makah	360-645-2205
Muckleshoot	253-939-3311
Nisqually	360-456-5221
Nooksack	360-592-5176
Port Gamble S'Klallam...	360-297-2646
Puyallup	253-597-6200
Quileute	360-374-6163
Quinault	360-276-8211
Sauk-Suiattle	360-436-0132
Skokomish	360-426-4232
Squaxin Island	360-426-9781
Stillaguamish	360-652-7362
Suquamish	360-598-3311
Swinomish	360-466-3163
Tulalip	360-651-4000
Upper Skagit	360-856-5501

NWIFC Executive Director: Michael Grayum; NWIFC News Staff: Tony Meyer, Manager, Information and Education Services Division; Emmett O'Connell, South Sound Information Officer (IO); Darren Friedel, Strait/Hood Canal IO; Jeff Shaw, North Sound IO; Debbie Preston, Coastal IO; and Sheila McCloud, Editorial Assistant.

For more information: NWIFC Information Services in Olympia: (360) 438-1180; Mount Vernon: (360) 424-8226; Kingston: (360) 297-6546; or Forks: (360) 374-5501.

Visit the NWIFC Web site at
www.nwifc.org

On the cover: Wildlife Technician Jeremiah Johnson, a Makah tribal member, listens for the beep that will help him locate a black-tail deer with a radio collar. The project is helping the tribe to learn more about deer populations both on and off the Makah reservation. Related story on Page 10.

Photo: D. Preston

Drought Looms Over Tribal Hatcheries



Technicians with the Tulalip Tribes feed coho salmon at the tribes' Upper Tulalip Creek release ponds. Dry weather is forcing tribal staff to alter some hatchery practices. Photo: J. Shaw

Despite help from spring rains, several consecutive dry winters have left salmon populations in the North Sound without enough water to thrive.

"We are seeing a dangerous trend toward drought conditions," said Daryl Williams, environmental liaison for the Tulalip Tribes. "Adapting to these realities requires vision. It also requires us to face the problem now, and realize that it is not going away."

The watersheds on and around the Tulalip reservation near Marysville are water-starved. Over the past several years, drought conditions have conspired to deplete the river's lifeblood, local groundwater tables. Flow models currently predict that the Snohomish basin may see stream flows diminish by half within 10 years.

Perhaps most impacted? The tribe's hatchery operations.

Each year, Tulalip's Bernie Kai Kai Gobin Salmon Hatchery produces millions of fish to improve harvest prospects for fishermen while allowing wild runs the chance to recover. The past two years, though, low creek water levels have threatened to devastate the hatchery's releases. To save millions of salmon required quick action by tribal staff.

"Last year, we could have lost all of our chum if our hatchery staff hadn't been alert and noticed the warning signs," said Mike Crewson, a biologist with the Tulalip Tribes. "We were just a few days from losing between 4 and 8 million fish."

'We are seeing a dangerous trend toward drought conditions.'

*– Daryl Williams
Environmental Liaison
Tulalip Tribes*

Fortunately, tribal technicians saw salmon behaving erratically, milling around the surface and appearing disinterested in food. Low water levels had increased the water's temperature and caused extremely low levels of dissolved oxygen, a potentially deadly combination. Because of attentive staffers, the Tulalips were able to make adjustments, such as releasing salmon smolts early and aerating the hatchery's ponds during periods of warm weather.

By boosting temperatures and choking out necessary dissolved oxygen, low flows

create conditions ripe for disease – and at worst, for catastrophic fish kills. Before that happens, stress and reduced growth take their toll on young salmon, decreasing the chance they will survive.

Knowing that recent dry winters and diminished snowpack created ongoing risks, the Tulalips planned ahead for this season. To maximize what resources were available, chinook at the tribe's hatchery and release ponds were raised on second-use water that had already been used in the hatchery coho ponds. Chum, which can more easily tolerate being set free early, were released at a smaller size and in six batches over a three-week period. Ordinarily, the chum are released all at once.

Even taking all these precautions, though, tribal staff were still forced to hope for more rainfall to fill the watershed's beleaguered creeks. In 2004, flow rates in the streams that supplied the tribe's release ponds were only one-third of the average levels over the last five years.

This year began even drier, and low-flow conditions began even earlier. Without a last-minute shift in weather conditions, a crisis might still have resulted.

"We got bailed out by rains in late April and early May," said Crewson. "If we hadn't seen water levels rise over the last month and a half, we would have had to take more drastic measures."

Those measures might have included releasing the chinook or coho earlier than intended, or perhaps even setting the young salmon loose directly into Tulalip Bay instead of a creek. Either step would have diminished the survival rate of the hatchery fish. If the fish were released earlier than usual at a smaller than optimal size, their adjustment to the saltwater environment would have been compromised. If they were released directly into the bay, they would not be afforded the opportunity to imprint on their return streams, which would confuse their homing ability on their return migration, leading to increased straying and depleted returns.

Reduced chum returns would have had a negative impact on the tribe's chum broodstocking program, where returning adult chum salmon are captured in their

Continued, Next Page

Quinault Nation Clam Gift Boosts Local Economy

An estimated 12,000 non-tribal recreational razor clam harvesters got in some extra digging on Copalis Beach near Ocean Shores in early May thanks to a gift of 180,000 clams from the Quinault Indian Nation.

“The Ocean Shores community and surrounding area were very appreciative,” said Ed Johnstone, fisheries policy spokesperson for Quinault Indian Nation (QIN). “For centuries, we’ve always protected and shared this resource.”

Because tribal estimates found that extra clams would be available this year, the Quinaults offered to share the surplus with recreational diggers.

‘We really appreciate the Quinaults’ generosity.’

*– Jeff Koenings
Director
Washington Department
Of Fish and Wildlife*

“We were only able to include Copalis Beach in the two-day May opening because the Quinault Indian Nation generously agreed to transfer 180,000 clams from their share of the harvest to the non-tribal share,” said Dan Ayres, coastal shellfish manager for the Washington Department of Fish and Wildlife.

“This was an unusual circumstance. The nation rarely has clams left over and we can only make that determination at the beginning of May toward the end of the season,” said Joe Schumacker, operations section manager for the QIN. “This year, we could



A gift of 180,000 razor clams from the Quinault Indian Nation enabled about 12,000 recreational diggers to harvest at Copalis Beach in May. *Photo: Courtesy WDFW*

see, based on harvest patterns, that we would have clams left over. Because it’s a use them or lose them situation. The QIN shared those clams with non-tribal recreational harvesters.”

The QIN and the state work together to assess the clam populations in the area and develop harvest limits based on the available percentage of clams. The harvests are shared equally between recreational and tribal diggers as specified by treaty and affirmed by the courts.

A weekend of non-tribal recreational clamming is big business for hotels, gas stations and restaurants in the Ocean Shores area. Business doubles at Anthony’s Home Port Restaurant in Ocean Shores during a razor clam opening with nice weather, managers said.

Traffic entering Ocean Shores was up an average of 9 percent over this time last year mostly thanks to better weather and good clamming. More than 368,000 visitors passed through Ocean Shores in May according to Ken Mercer, director of tourism and business development for Ocean Shores.

“We really appreciate the Quinaults’ generosity,” said WDFW Director Jeff Koenings. “Particularly with Long Beach closed, the fact that we could open Copalis really contributed to the success of this final dig of the season.” – *D. Preston*

Drought

Continued From Page 3

release stream on the reservation and spawned by hatchery staff.

“This warming trend is already impacting adult salmon more than people realize,” said Williams. “When spring and summer chinook return home to spawn, low water levels can prevent them from migrating upstream. They have to hold in saltwater, or in shallow, warm stream pools for too long.”

When the fish do spawn, low flow conditions also put their nests (or redds) in danger. When fall rains come, water levels rise proportionally greater than they have in the past – with less water in the river, a little rain acts like a lot. Relatively small amounts of rain then increase the chance of salmon redds being damaged or washed away entirely.

While the Tulalip Tribes are already starting to feel the squeeze,

many other North Sound tribes are anticipating a dry summer and fall – and taking steps to head off potential trouble.

The Upper Skagit Tribe may be forced into releasing chum from their hatchery early. The Lummi Nation is concerned about water levels on the Nooksack River, which supplies their hatcheries with water. Along with the Stillaguamish River, the South Fork of the Nooksack will also be home to returning threatened summer chinook. Tribal biologists are watching closely for low flow conditions that could undercut fish health.

“We’ll do everything within our power to protect the fish,” said Scott Schuyler, natural resources policy coordinator for the Upper Skagit Tribe. “But at this point, the best thing we can hope for is a cool, wet spring and summer.” – *J. Shaw*

'Giant Lawn Darts' Innovative Salmon Recovery Experiment

Salmon don't grow on trees or fall from the sky. But this spring, as part of an innovative salmon recovery experiment, the Stillaguamish Tribe dropped trees from the sky in an attempt to help salmon.

The Stillaguamish Tribe's Natural Resources Department, in a novel approach to get desperately needed wood back into the Stillaguamish River, used a helicopter to drop 16-foot-long untreated telephone poles into the mouth of the river at Port Susan. The plan was for the logs, fitted with plywood vanes and 250-lb "bullet" tips, to implant themselves six to eight feet deep in mudflats, effectively creating a natural logjam.

"They look like giant lawn darts," said Shawn Yanity, chairman of the Stillaguamish Tribe. "Looks aside, we need to get big logs like these into the river if we're serious about improving fish habitat."

Scientists agree that large woody debris in rivers is critical for fish, including the spring chinook, listed as "threatened" under the federal Endangered Species Act.

"Wood is absolutely essential for the health of habitat like this," said Pat Stevenson, the tribe's environmental director. "Having large logs like this in the river makes it more likely that additional wood will be recruited and stay in the river delta, which can only help the ecosystem."

'Experimenting with new strategies means we learn more along the way.'

— Pat Stevenson

*Environmental Director
Stillaguamish Tribe*

Historically, logjams occurred naturally, improving ecosystem conditions. Currently, when today's smaller trees fall into the river, without bigger logs to hold them in place, they are simply swept out to sea. Without natural logjams, today's driftwood washes



Logs, front-weighted and outfitted with fins, rest in a staging area.

through the intertidal area, leaving a largely featureless plain devoid of worthwhile habitat. Wood creates pools where salmon can rest and cover that helps young fish escape from predators.

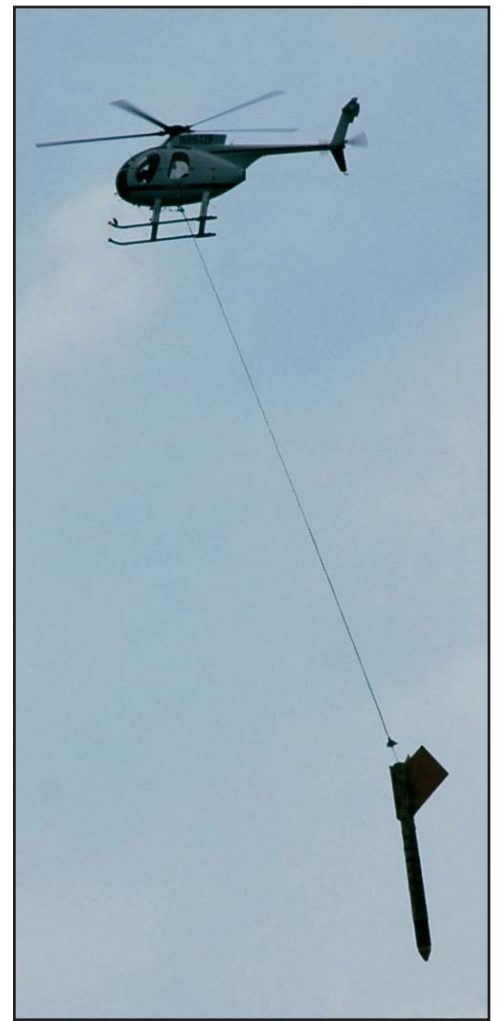
"Having significant amounts of wood near the river mouth is important, since it helps create salt marsh habitat in the river delta," said Stevenson. Salt marsh habitat is critical habitat for salmon as they make the transition from fresh water to salt water.

Dramatic changes have occurred over the last 150 years, most of them detrimental to fish.

"Most people don't realize just how different the tideflats are today from the way they were before settlement by non-Indians," said Stevenson. "Before settlement, huge pieces of wood were common in these areas, helping fish in numerous ways. What we see today is just a shadow of that."

Most logjam projects – used with success by the Stillaguamish Tribe in the past, and by other tribes such as Lummi, Makah, Quileute and Hoh – involve traditional heavy equipment construction. While effective, this method is also costly.

Certain characteristics of this part of the Stillaguamish basin also could make the lawn-dart approach advantageous. In these nearshore environments, pile-driving barges can only work periodically, because changing tides can prevent access. Habitat restoration is desperately needed in these intertidal areas that salmon use to prepare for their journey out to sea. Using a helicopter rather than a conventional pile-driving barge could bring time and cost-saving benefits.



A helicopter chartered by the Stillaguamish Tribe prepares to drop a log into tideflats. Photos: J. Shaw

Unfortunately, the tribe's first attempt fell victim to a common spring foe – high winds.

When tribal staff and a local helicopter pilot tried to sink the logs into delta sand on March 29, robust gusts kept pushing the logs into a horizontal position. Despite repeated drops, each log landed flat on the sand rather than striking in the ground.

But even with the oppressive weather, the attempt brought much optimism.

Tribal scientists believe that trying untested approaches has benefits. Besides its potential habitat value, Stevenson said, the project will also serve as a feasibility study for future efforts of this nature.

"Experimenting with new strategies means we learn more along the way. If we can get this approach to work," said Stevenson, "it will also represent an inexpensive alternative to building logjams the conventional way."

The tribe plans another attempt in late June. – J. Shaw

Makah Tribe Observes Treaty's 150th Anniversary

Makah veterans paraded the flags of the Makah Nation, the United States and each of the armed services into the gym. Waiting in anticipation were 1,000 guests, all gathered to observe the 150th anniversary of the Treaty of Neah Bay and celebrate the sixth anniversary of the successful harvest of a single gray whale.

"Our veterans are symbols of the promises we made when we signed the treaties. We kept our promises to protect both our own people and the people of the United States," said Ben Johnson, Makah tribal chairman.

When the Makah people signed the Treaty of Neah Bay 150 years ago, they reserved the right to fish, whale, seal, hunt and gather in all of their traditional places in exchange for a large part the Olympic Peninsula.

Six years ago, the tribe harvested their first gray whale in nearly a century, resurrecting a cultural cornerstone and celebrating a treaty-protected right. The joy of that memory was tempered by the knowledge that the tribe must still fight for their treaty-reserved right to harvest whales.

'It's a tribute to our ancestors that they were able to make sure the things most important to us were reserved.'

*– Micah McCarty
Council Member
Makah Tribe*

Concentrating on the wisdom of the Makah forefathers, however, allowed tribal members to remain positive about the future during the ceremony.

"It's a tribute to our ancestors that they were able to make sure the things most important to us were reserved," said Micah McCarty, Makah tribal councilman and whaling commission member. "At the time of the signing, one by one, tribal members would come up and say, 'If you take away the sea, I am a poor man. I can't have the whale, I can't have the halibut.' They made sure we could fish, go whaling and sealing as we always had. That's who we are – we are people of the sea."

The youth of the tribe were a focal point of the gathering with more than 50 children from preschool age to late teens participating in dances or a re-enactment of the signing of the treaty. "It's important that the youth understand the power of the treaty and see what their elders have done to move the tribe forward. Some of them will begin to shoulder the responsibility for the next generation soon," said McCarty. "We have work to do to continue to secure the promises in the treaty – our right to harvest whales is still being blocked. We have great unmet needs in health care and education, obligations outlined in the treaties."

As part of a recent treaty symposium held in Olympia, Makah teens wrote about the importance of keeping the songs and the culture alive as well as being educated so they could protect the treaty rights. Those essays were also read during the celebration.

"It was so impressive to hear those essays," said Debbie Wachendorf, Makah councilman, who arranged to have the teens read their compositions during the symposium and at the treaty observance. "People were crying as the teens read. Our youth are helping us celebrate what our forefathers negotiated for our people – they secured our fishing, whaling and hunting rights so we could survive," said Wachendorf.

All former tribal council members, Makah Days royalty, and veterans were honored at the ceremony, as well as Al Zientz, an attorney for the tribe for more than 40 years.

– D. Preston



Micah McCarty, Makah tribal councilman, offers a dance at the tribe's treaty anniversary observance. *Photos: D. Preston*



Jaylen Ray Fryberg, 5, sings with other Tulalip Tribes members who joined the Makah gathering.



Makah youth Lashia McCarty (front) and Inanna McCarty display the joy of dancing.



Makah dancers swirl past the skull of a gray whale.

Makahs Add To Gray Whale Research



A gray whale begins its glide back to the sea bottom to feed near Point of Arches off the Olympic Peninsula. *Photo: D. Preston*

A watery highway for gray whales exists beneath the waters of the Pacific Ocean off the Washington coast. Throughout the spring, thousands of whales are moving through, pausing to feed in some cases, but most remaining on course for Alaska to feed for the summer.

The Makah Tribe, as part of documenting the marine life that passes through and inhabits their traditional fishing grounds, is contributing to an international effort to understand the biology of gray whales.

“The tribe has an incredible amount of knowledge about many of the marine mammals in this area,” said Nathan Pamplin, marine mammal biologist for the tribe. “However, it is important to collect information using accepted research methods to more easily incorporate this data into management.”

Pamplin was hired by the tribe to compile scientific information about the marine mammals within the Makah’s usual fishing area and to conduct research needed by the tribe that wasn’t being addressed by other agencies.

“We have treaty rights to protect,” said Russ Svec, Makah fisheries manager. “The treaty is a living, breathing document and our tribal fisheries are the heartbeat of that document.”

“Our marine resources are the physical connection to our past. It’s what helps keep our traditions alive. That is why a strong, comprehensive marine mammal program is so important to us and we were fortunate to hire someone who has the skills and intangible qualities we need to achieve these goals.”

Pamplin documents the whales with photographs and then cautiously approaches the whale from a research vessel to collect a small tissue sample. Genetic information, including sex of the whale, is determined from the tissue sample. The presence of harmful, usually human-generated, contaminants is determined from the blubber portion of the sample. Many of the contaminants are stored in a whale’s blubber.

“As part of a regional effort with many researchers along the Pacific coast, we’re documenting survival rates for gray whales, overall movements, abundance, genetics and the overall health of the population,” said Pamplin. – *D. Preston*

Gray Whale Fast Facts

- Gray whales historically existed in both the Pacific and Atlantic oceans. The Atlantic Ocean population was wiped out by the end of the 17th century.
- Adult gray whales can be up to 50 feet long; females are larger than males.
- The Eastern North Pacific gray whale stock feeds in the summer in the northern Bering and Chukchi seas and winters in Mexican and Southern California waters where females bear a calf every other year. The journey covers roughly 12,000 miles round-trip.
- Whales are best seen off the Washington coast as they head north – from late February through June – when they travel closer to shore. They are seen farther offshore during the southern migration from early December through early February.
- Gray whales feed on bottom-dwelling organisms such as small crustaceans, mollusks, and worms.

Timber Sale Will Fund Habitat Projects

A recently agreed upon timber sale in the Olympic National Forest could help salmon by funding habitat restoration projects in the Skokomish River Valley. And the sale could be one of many similar timber harvests in the years to come.

Revenue generated from the Flat Timber Sale not only goes toward paying off a logging company, but also toward restoring fish and wildlife habitat in the Skokomish River watershed. The Skokomish Tribe, the U.S. Forest Service, Mason County officials, the timber industry, private landowners and environmental groups, all support the timber harvest and the planned restoration projects.

“This really is a different approach,” said Jeff Heinis, habitat biologist for the Skokomish Tribe. “What these different groups have all agreed upon is a timber harvest that not only helps people in the community by providing jobs, but also benefits fish and wildlife by restoring degraded habitat.”

The project stems from a move by Congress in 2003 that allows the Forest Service to use revenue generated from timber harvests for habitat restoration projects. Diverse groups within the affected community, however, must agree on the timber sale and habitat improvements.

“We were able to do just that with the Flat Timber Sale,” Heinis said. “Hopefully, we will continue to reach agreements on future timber harvests and earmark funds for much-needed restoration projects that have already been identified by the tribe and local governments and organizations.”

The timber harvest will take place about 10 miles up the Skokomish Valley. Around 2.5 million board feet of timber will be removed, and that is expected to generate about \$500,000. The harvest, which will remove Douglas fir, alder, hemlock and cedar, is scheduled for next spring.

“It’s a crowded timber stand,” Heinis said. “It could use some thinning, and I definitely think that will open up some habitat for deer and elk.”

Some of the revenue from the harvest will go toward removing an old logging road on Brown Creek. Sediment from the road has been clogging a portion of the Skokomish River for many years, degrading salmon spawning and rearing habitat. Several species of salmon, including Puget Sound chinook and Hood Canal summer chum, which are listed as “threatened” under the federal Endangered Species Act, are present in the Skokomish River watershed.

Other habitat restoration projects that could be funded through similar timber sales in the Olympic National Forest also have been identified. Decades of logging has left the forest riddled with logging roads and poorly functioning culverts that degrade water quality and keep salmon from reaching spawning grounds.

“The Skokomish River watershed is extremely important to the tribe,” said Heinis. “Working with local groups on projects that correct mistakes that were made in the past goes a long way toward restoring the natural resources the tribe and the community have always depended on.” – D. Friedel



Jeff Heinis, habitat biologist for the Skokomish Tribe, adjusts a marker on a tree in the Olympic National Forest. A recently agreed upon timber sale in the forest could help salmon by funding habitat restoration projects. Photo: D. Friedel

Grayum Selected As New NWIFC Executive Director



Mike Grayum

Michael Grayum has been named executive director of the Northwest Indian Fisheries Commission. Grayum, 57, replaces James Anderson, 54, who served as NWIFC executive director for more than 20 years. Anderson will remain with the NWIFC part-time in an advisory role.

Formerly the head of the NWIFC Fishery Services Division, Grayum has been with the organization for 28 years. He was among the commission’s first employees upon its creation following the *U.S. v. Washington* ruling that re-affirmed the tribes’ treaty-reserved salmon rights and established them as co-managers of the resource with the State of Washington.

“The treaty tribes are active participants in every facet of natural resource management in this region, and are leaders in efforts to preserve, protect and enhance those resources,” said Grayum. “Many challenges lie before us. I am confident that the tribes and NWIFC will continue to meet those challenges for the benefit of the natural resources and all who depend on them.”

Suquamish Tribe Hopes Penalty Will Deter More Oil Spills

A fine issued by the Washington Department of Ecology to Foss Maritime – the company that took responsibility for an oil spill that fouled the Suquamish Tribe’s beach and marsh 16 months ago – is one of many necessary steps needed to protect Puget Sound.

The \$577,000 fine was the second largest ever issued by the state Department of Ecology for a petroleum spill.

“The Suquamish Tribe is relieved to hear that the Department of Ecology is recognizing the magnitude of the oil spill that fouled our sacred beach and marsh here at Doe-Kag-Wats over a year ago,” said Leonard Forsman, Suquamish tribal chairman. “We hope that the oil transport industry will take notice of the penalty assessed against Foss Maritime and take action to prevent future oil spills in our traditional waters.”

On Dec. 30, 2003, about 5,000 gallons of oil poured into Puget Sound near Edmonds. The heavy bunker oil was being transferred to a Foss barge at a Chevron/Texaco terminal at Point Wells. Winds and tides quickly pushed the uncontained oil across Puget Sound where it washed up on the sacred beach and estuary owned by the tribe. The spill polluted important nearshore habitat used by herring and salmon, and damaged shellfish beds.

The events surrounding the spill are detailed in a comprehensive investigative report released recently by the Department of Ecology. The report attributes cause for the spill to faulty alarm systems located on the barge and inadequate monitoring



Workers clean up an oil spill that fouled the Suquamish Tribe’s beach and marsh in 2003. *Photo: D. Friedel*

of the barge’s tank levels. The report also describes the terminal facility’s response once they determined that a spill was occurring. According to the report, Chevron/Texaco’s response boats were not in working order, delaying by over an hour the deployment of containment boom that could have prevented the further escape of oil.

The tribe continues to work with Foss regarding how the tribe will be compensated for damage to the culturally sensitive site, used by tribal members as a place of worship and healing, as well as subsistence harvests.

“We appreciate Foss Maritime’s effort to clean up the oil spill and their willingness to take responsibility for the problem,” Forsman said.

“Stricter spill prevention and response measures are an absolute must for western Washington,” Forsman said. “Because millions of gallons of oil is transported through Puget Sound each year, we need meaningful and effective regulations that will protect this important waterway.” – *D. Friedel*

Fishermen Net Award For Hood Canal Chum Carcass Project

An effort to keep chum salmon carcasses out of Hood Canal this past fall has earned Skokomish tribal fishermen an environmental achievement award from the Hood Canal Coordinating Council.

Concern for the health of Hood Canal, which has been plagued by low oxygen problems, prompted the tribe to do its part to try and help the waterway. The tribe, along with American-Canadian Fisheries Inc., developed a project that kept chum salmon carcasses from being dumped back into Hood Canal.

Every fall, treaty fishermen harvest chum salmon returning to the State of Washington’s Hood Canal Hatchery at Hoodsport. A glut of foreign-farmed raised Atlantic salmon has flooded the market in recent years, driving down prices and market opportunities for Indian and non-Indian fishermen in western Washington. The lack

of a market for chum salmon has forced tribal fishermen to turn to the roe market, where salmon eggs can fetch \$5 a pound.

Stripping the eggs from the fish results in tens of thousands of carcasses requiring disposal, even after thousands of the fish have been given to tribal members and local food banks. In the past, those remaining salmon carcasses were returned to the canal – a standard enhancement practice in natural resource management.

This past fall, however, chum salmon carcasses that were not purchased were either processed by American-Canadian for food banks or disposed of at a site on the Skokomish Tribe’s reservation. Those carcasses disposed of on the reservation were mixed with wood chips and used to create compost for the tribe’s community garden and timberland.

In previous years, plants, insects, wildlife and even other fish have benefited from the nutrients that the dumped carcasses provided as they decomposed in the canal. Hood Canal, however, is now starved for the oxygen that is required to break down those carcasses. This is because most of the oxygen is used in dissolving high levels of nutrients deposited daily by thousands of septic systems lining the canal, as well as nutrients from storm-water and agricultural runoff.

“We appreciate this award that recognizes the fact that we have stepped up and done our part in trying to help keep Hood Canal healthy,” said Dave Herrera, fisheries manager for the Skokomish Tribe. “Now it’s time for the state and local governments to address the problems caused by septic systems, agricultural practices and storm-water runoff.” – *D. Friedel*

Elk 'Alive And Kicking' Following Relocation

The second round in an ongoing tribal effort to bolster a weak population of elk in the North Cascades was highly successful, tribal officials said. All 10 of the elk transferred from the Mt. St. Helens area near Toutle, where elk are plentiful, survived their relocation to the North Sound region.

This year's transfer adds to the 41 animals the tribes and the state worked together to transfer to the dwindling bands of the Nooksack elk herd.

"We're happy and proud that all of the animals we brought north have survived," said Todd

Wilbur, a Swinomish tribal member who chairs the Northwest Indian Fisheries Commission's Inter-tribal Wildlife Committee. "Now, 10 more elk are alive and kicking in core habitat for the Nooksack elk herd."

During two spring capture sessions this March, the tribes worked with state and local groups to transfer six cow elk and four calves from the wilderness around Mt. St. Helens to the North Sound. This continues a multi-year effort by the tribal and state co-managers to rebuild the North Cascades elk herd, also known as the Nooksack elk herd, by removing animals from the overpopulated Toutle River Valley.

The tribes will continue monitoring the collared animals at least once a week for the next several years.

"Elk and other wildlife have always been essential for the tribes," said Scott Schuyler, natural resources policy coordinator for the Upper Skagit Tribe. "Allowing elk populations to vanish is simply not an option for us."

Besides assistance from the Washington Department of Fish and Wildlife, the tribes received valuable volunteer assistance from Mark Smith and Jim Marks of the Mount St. Helens Preservation Society. The Yakama Nation also provided material assistance.

"This shows what can happen when we work together," said Shawn Yanity, chairman of the Stillaguamish Tribe. "The tribes are committed to preserving natural resources for future generations, and cooperation is the way we want to achieve that goal."

Another capture is tentatively planned for mid- to late summer.

The Point Elliott tribes include Lummi, Muckleshoot, Nooksack, Sauk-Suiattle, Stillaguamish, Suquamish, Swinomish, Tulalip and Upper Skagit.

Biologists believe a number of factors contributed to the decline in the North Cascades elk herd's population, including habitat changes and over-hunting. WDFW and the tribes have forbidden hunting in the herd's core area since 1993, and hunting will not be allowed until elk populations have reached recovery goals. —J. Shaw



A radio-collared cow elk surveys her new home in the North Sound. Photo: C. Madsen

Deer Study Sheds Light On Shedding Deer

About one-quarter of the black-tail deer examined as part of a study by the Makah Tribe are afflicted with a parasite-induced hair loss disease called hair slip syndrome. Hair loss reduces the ability of the deer to regulate its body temperature during cold spring rains, which can lead to hypothermia, stress, exhaustion and often death.

Recently, Oregon state wildlife scientists concluded the syndrome is caused by a non-native louse that likely came to the United States via imported exotic deer. Lice cause the deer to lick and scratch incessantly, resulting in hair loss.

Makah wildlife biologists believe the incidence of hair slip is high enough that it is depressing black-tail deer populations on the North Olympic Peninsula. They are expanding their study to confirm that belief by tracking the offspring of mothers with the hair slip syndrome. "We want to study these fawns through the birth of their own fawn," said Jon Gallie, wildlife biologist for the Makah Tribe. "All the deer with the syndrome don't die, but the mortality rate reported in other studies ranges from 30 to 70 percent." Fawns likely contract hair slip from their mother.

During the past two years, Makah tribal biologists have radio collared 35 deer, on and off-reservation. Along with quantifying the incidence of hair loss, biologists are identifying habitat preferences of the deer, tracking deer behavior relative to logging roads, causes of mortality, and overall survival rates.

Tribal biologists were expecting to see a surge in fawn survival this year because of increased logging activity both on and off reservation that initially increases forage for deer and elk. "That, coupled with two consecutive mild winters, led us to expect higher survival, but that's not the case and part of it might be related to the high percentage of deer with the hair loss," said Gallie. "There could be other factors, but we'll have a better idea after we process some of the data this fall."

—D. Preston

Squaxin Island Hunters Clean Up Woods

After their hunting season ends, Squaxin Island tribal hunters go back into the woods to clean up after themselves, and others. “We spend a lot of time picking up trash in the woods because we care about having clean forests as much as anyone,” said Pete Kruger, hunting policy representative for the tribe.

During a recent cleanup they found more piles of trash from many other sources other than tribal hunters. “Only about 10 percent of Squaxin Island tribal members go into the woods to hunt around here,” said Kruger. “We don’t make the mess, but we clean it up.”

Household trash, including a pool table, old toys and an aquarium were picked up within sight of the road. “Most of what we find is within 200 yards from the logging road gate,” said Mike Foster, a tribal hunter. “This is why they have to put gates on these logging roads; people just dump their trash back here.”

Squaxin Island tribal hunters have been cleaning up the woods for more than 10 years. “This is a big part of our hunting tradition now,” said Kruger. “We get a lot of hunters coming back out to help.”

About a dozen hunters split up into four groups for the cleanup. They brought with them pickup trucks for appliances and the bigger pieces of garbage and trash bags for the more frequent piles of pop cans. “Last year we found a stolen car back here,” said Foster. “It was cut up into pieces, and after we hauled it out, we had a hard time getting rid of it because it was stolen.”



Mike Foster, Squaxin Island tribal hunter, picks up trash in the woods near Shelton.
Photo: E. O’Connell

All of the land that tribal hunters clean up is owned by the Green Diamond Resource Company. The tribe and the Shelton-based company have a successful, long-term working relationship and a formal agreement to allow tribal hunting on Green Diamond land. “We hunt exclusively on their land around here and picking up trash is a way for us to pay them back,” said Kruger. “We like to do anything to help them out and make our relationship better.”

“People think that there are these vast land tracts available for them to dump their trash and that someone else will take care of it,” said Patti Case of Green Diamond. “It’s an ever-increasing problem for us. They don’t tend to be the ones that are making the mess, so it’s much appreciated that they come back and clean up. They clearly respect the land.”

Traditionally, the Squaxin Island Tribe depended on hunting as a major food source during the winter when salmon and other food weren’t readily available. That tradition continues today as wildlife still provides important nutrition to Indian families on reservations across western Washington. “We have a connection to these woods,” said Jim Peters, chairman of the Squaxin Island Tribe. “We care about how they are treated.”

“I’ve been hunting out here all my life,” said Kruger. “I don’t want to go walking in the woods surrounded by trash.”

– E. O’Connell

Generations



The Lummi Nation hosts a salmon barbecue at their yearly Stommish Festival circa 1950. Stommish, an annual water festival, features canoe racing and a pow-wow. This year’s Stommish, held June 17-19, was the 59th annual event.

Photo: Courtesy Lummi Nation Archive

Tribe Plants Trees, Shrubs For Salmon

The Jamestown S’Klallam Tribe has planted thousands of trees and shrubs in the Sequim area to help improve salmon and wildlife habitat.

Tribal crews have planted about 11,000 trees and shrubs along the Dungeness River, and the tribe plans on putting another 7,000 plants in the ground later this fall. About 8,000 trees and shrubs have been planted at Jimmycomelately Creek, along with a field of lilies and camas.

The riparian – streamside – improvements cover about 30 acres of land along the Dungeness River, and about 15 acres along Jimmycomelately Creek. Trees that were planted include western red cedar, black cottonwood, Oregon ash and Pacific crabapple. Shrubs that were planted include Nootka rose, Indian plum, red osier dogwood and black twinberry.

“We expect these native trees and shrubs to do well,” said Hansi Hals, restoration planner for the Jamestown S’Klallam Tribe. Hals coordinated the Dungeness River plantings. “The planting is a wetland and wildlife habitat improvement project on its own, but it is also being done in conjunction with the early planning of a dike modification along this reach of the river. If the dike is set back, it will re-connect the recently planted floodplain to the river, and will be a terrific jumpstart for other restoration projects that will be needed.”

Streamside vegetation provides shade that cools the water, keeping it at an ideal temperature for fish. Plus, over time, some trees will fall into the stream, creating habitat for juvenile and adult fish.

‘Adding healthy vegetation near and along these important streams is a big step toward creating healthy habitat...’

**– Byron Rot
Habitat Biologist
Jamestown S’Klallam Tribe**

Riparian vegetation also helps with water quality. Acting as a natural buffer, the riparian trees and shrubs keep sediment and pollutants, often from storm-water runoff, from flowing into nearby streams.

As part of a major habitat restoration project at Jimmycomelately Creek, the tribe re-planted the barren creek side with trees and



Dusty Humphries, right, and Derek Sanderson, both natural resources technicians for the Jamestown S’Klallam Tribe, plant trees along the Dungeness River. *Photo: D. Friedel*

shrubs. The creek and estuary were recently transformed into a healthy wetland for fish and wildlife. A new meandering channel was created for Jimmycomelately and Dean creeks, and landfill from the site of a former log yard was removed. Two dilapidated railroad bridges were taken out, and several pilings were pulled out of the estuary. A new Highway 101 bridge was constructed to replace a culvert that hindered fish passage.

Jimmycomelately’s new meandering channel restores important habitat for Hood Canal summer chum, which are listed as “threatened” under the federal Endangered Species Act. The creek also is home to steelhead and cutthroat trout, along with coho salmon and numerous species of birds.

Along with the addition of trees and shrubs near Jimmycomelately Creek, the tribe also planted 1,000 lilies and 10,000 camas bulbs near the creek’s newly restored estuary. Before the introduction of potatoes, camas roots were an important source of starch for tribal members. The root was boiled or roasted, then dried and stored for later use, however, some were eaten immediately after being cooked. In the past camas bulbs were not only a vital food source, they were also valuable trade items.

One-quarter of an acre was planted with the camas bulbs. Later this fall, the tribe will spread a native prairie seed mix, which will include camas, on the remaining three acres. Garry oaks also will be planted at the site, which is located directly across Highway 101 from the tribe’s Seven Cedars Casino.

“This is a great project,” said Byron Rot, habitat biologist for the Jamestown S’Klallam Tribe and coordinator of the restoration of Jimmycomelately Creek. “Adding healthy vegetation near and along these important streams is a big step toward creating healthy habitat for fish and other wildlife in the Sequim area.”

– D. Friedel

Nisqually Tribe Looks To Solve Steelhead Puzzle

Every winter for the past 10 years, the Nisqually River steelhead run has gotten smaller. “No one seems to have a good answer on why steelhead haven’t been coming back in strong numbers,” said David Troutt, natural resources director for the Nisqually Indian Tribe.

To piece together an answer, the tribe and Washington Department of Fish and Wildlife are doubling their monitoring efforts by conducting steelhead redd surveys by the air and by boat. “We need to get a clearer picture of steelhead populations in the

Nisqually River,” said Craig Smith, harvest management biologist for the Nisqually Tribe. Redds – nests dug by steelhead in river gravel – are easily identifiable from the air and by boat because the fish rub gravel clean as they dig.

“You can’t see the entire river from a boat, but you don’t see every steelhead redd from the air either,” said Smith. “By using both methods, we are making sure we see every redd possible.”

While steelhead have been declining in the Nisqually for the past decade, the reasons are not well understood. The state and tribal co-managers would like to see just under 2,000 steelhead return to spawn every year, but since 1993, fewer than 1,000 have come back. Decades ago, the Nisqually River had the strongest run of steelhead in the Puget Sound, with more than 6,000 returning every year. “The Nisqually Tribe hasn’t fished for steelhead since they have been in decline and sport fishermen stopped fishing for them three years ago,” said Troutt.



Craig Smith, Nisqually Tribe harvest management biologist, spots a steelhead redd in the Nisqually River. Photos: E. O’Connell



Redd surveyors drop a pink rock in the river to mark the nests.

The tribe is using the expanded redd data to write a multi-species recovery plan for the Nisqually River that includes steps to recover steelhead and other salmon species. “We can take steps now to protect the stocks that are having trouble,” said Troutt. In addition to chinook, which are listed as “threatened” under the federal Endangered Species Act, the plan will also address coho, pink, and chum salmon.

There is a large part of the steelhead life cycle that is still a mystery. “Like all salmon, steelhead go out to the saltwater for a period part of their life,” said Troutt. “There might be something happening out there that we don’t know about.

“Steelhead spend a lot of time feeding and rearing in the nearshore,” said Troutt. “The loss and degradation of habitat in the nearshore is likely having a significant impact on Nisqually steelhead. The more we know about Nisqually steelhead, the better job we can do bringing them back.”

– E. O’Connell

Once Thought Lost, Nisqually Late Coho Found

Volunteer salmon watchers rediscovered a run of late coho salmon that hadn’t been seen in the Nisqually River for more than a decade.

In late January volunteer salmon watchers started seeing dozens of coho salmon in Nisqually River tributaries, much later than normal. “On some of these streams, volunteers have gone out diligently for months and had hardly seen any salmon,” said Jeanette Dorner, salmon recovery manager for the Nisqually Tribe. “We asked them to keep looking for a few more weeks, and all of a sudden they started seeing coho.”

Coho typically enter the Nisqually River in October, but those earlier fish are likely the products of hatcheries and other supplementation. “Nisqually River late run coho salmon are a unique, wild run of fish that probably has always been coming back to the river. We just weren’t sure they were still there,” she said.

The late run coho were counted in Muck Creek near Roy, Toboton Creek in southern Thurston County, and the Mashel

River near Eatonville, among other places. “These coho were all over the place,” Dorner said.

“It’s possible that for the past 10 years these coho were returning in such depressed numbers that they were never seen,” said Dorner.

Next winter, the tribe plans to expand its efforts to try to more closely track late run coho. “We want to collect genetic material from these fish to see how closely related they are to other populations,” Dorner said.

The tribe’s salmon watchers program is always seeking volunteers. “This is such a great way to get involved in salmon recovery. This is how community involvement in salmon recovery is helping to bring salmon back,” said Dorner.

“This is a good sign for salmon throughout the Nisqually River watershed,” said Georgianna Kautz, natural resources manager for the tribe. “These salmon obviously have habitat to return to, and it’s important that we make sure they always do.”

– E. O’Connell

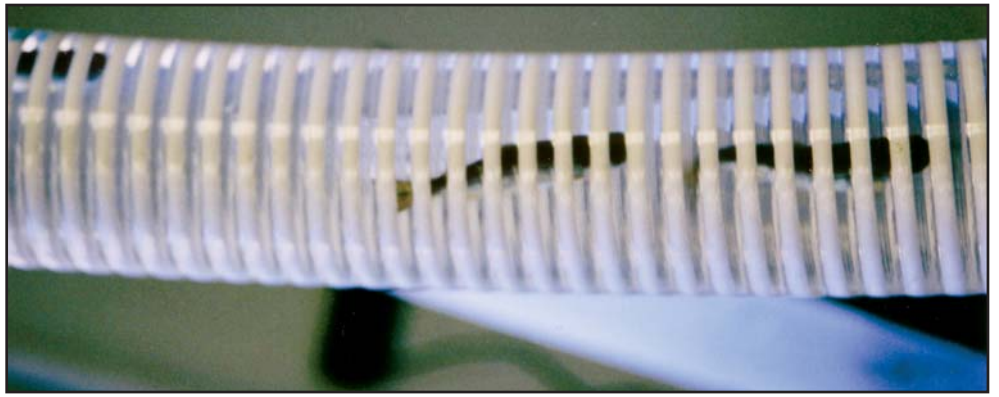
New Tagging Trailer Aids Salmon Management

A new automatic clipping and tagging trailer is assisting the treaty Indian tribes in western Washington with more efficiently marking and identifying hatchery salmon.

“Being able to tell hatchery and wild salmon apart is an important step in recovering weak salmon stocks,” said Michael Grayum, executive director of the Northwest Indian Fisheries Commission. The NWIFC is a natural resource consortium that provides services to 20 member tribes in western Washington.

Clipping the adipose fin of a hatchery-reared salmon allows them to be easily identified by fisheries managers. The adipose is a non-functional fin above the tail. The new trailer clips the fin without requiring handling or anesthesia, protecting the health of the young fish.

Once the finger-long fish are loaded into the trailer, they are automatically clipped, counted, and whisked back to their rearing pond. Up to six human fin clippers can be accommodated in the trailer if ad-



Young salmon are pumped through a tube in a new automatic tagging and fin-clipping trailer that is aiding salmon management. *Photo: E. O'Connell*

ditional fish need to be processed. The trailer dramatically increases the speed of fin-clipping, and because it needs fewer personnel, it makes the process of marking fish more affordable to tribes. It will travel to tribal hatcheries throughout the year to mark chinook, coho and steelhead. The trailer was purchased with federal funding secured by Rep. Norm Dicks (D-Wash.).

In addition to more efficiently marking hatchery fish, the trailer can also insert tiny coded wire tags into the snouts of young salmon. The tag codes indicate where and when the salmon were released. When the tagged salmon are harvested in fisheries or found on the spawning grounds, tags are recovered so biologists can track how salmon produced in tribal hatcheries survive and contribute to coastwide fisheries.

With the listing of two Puget Sound salmon stocks as “threatened” under the Endangered Species Act, tribal and state managers have put a new focus on evaluating the role of hatcheries in wild stock rebuilding efforts. For the past four years, treaty tribes have been implementing the Hatchery Reform project, a systematic, science-driven effort to address how hatcheries can help recover and conserve naturally spawning salmon populations.

“One of the major questions we want to answer is how tribal hatchery programs interact with wild salmon,” said Grayum. “By clearly identifying hatchery fish and knowing which hatcheries they come from, we can better understand how these fish contribute to fisheries and where they return to spawn.”

The tribes in western Washington release an average of 40 million hatchery salmon a year. “When they return as adults, these salmon will be caught by non-tribal and tribal fishermen,” said Billy Frank Jr., chairman of the NWIFC. “Strong tribal hatchery programs mean that everyone can catch more fish.”

– E. O'Connell

Fair Fishing

A Quileute tribal fisherman tends his net while fishing for spring chinook off Little James Island near the mouth of the Quillayute River. Fishermen must keep a close eye out to prevent voracious seals and sea lions from stealing their catch. *Photo: D. Preston*



Hoh Tribe Takes Stock Of Coho, Their Habitat

Mature cedar, spruce, hemlock and cottonwood trees tower over the quiet waters of an old channel of the Hoh River. Lush green salmonberry bushes bend under the weight of their ripe fruit, a favorite early spring treat of black bears.

With habitat such as this, it's not a coincidence that this old channel, which still outflows to the Hoh River, is producing some the highest numbers of young fish that the Hoh Tribe is encountering as part of an effort to tag young coho.

"The mature forest here plus the prime rearing habitat that a channel abandoned by the river provides has a lot to do with the productivity of this area," said Joe Gilbertson, salmon biologist for the Hoh Tribe.

The tribe hasn't trapped and tagged young coho since the late 1980s. Trapping this year is part of a multi-year effort to assess the most productive habitats for coho salmon as well as track how young coho distribute in those habitats throughout the year. Finally, adult coho movement and survival will be noted from the returns of coded wire tags caught in commercial and recreational harvest from British Columbia and Washington waters.

Hoh River coho range as far north as Alaska as they grow, and are frequently harvested in British Columbia as they begin

their return to the Hoh River basin.

"In the recent past, Hoh River coho were one of the stocks that the U.S. and Canada planned their harvests around to minimize impacts on those fish," said Jim Jorgensen, fisheries biologist for the Hoh Tribe. "The stock is relatively healthy now, but we've had human-caused impacts on habitat as well as loss of habitat outside Olympic National Park.

"The productive ocean conditions of the past few years are on the wane and may reverse, leading to weak natural coho runs like we had in 1993, 1994 and 1997. The information we're gathering now will give us an accurate picture of the health of both the coho stock and habitat and allow us to better predict numbers of returning fish," he said.

The Hoh Tribe relies on healthy runs of salmon to provide food and income to the remote reservation where unemployment exceeds 60 percent. Tribal fishermen can catch coho from September through the first week of December in good years. "Having healthy runs of fish is important to the tribe," said Jorgensen. "If all the runs are healthy in a given year, April is the only month a fishery wouldn't be expected."



Ernie Penn, fisheries technician, and Joe Gilbertson, fisheries biologist for the Hoh Tribe, pass through off-channel salmon habitat along the Hoh River. Photo: D. Preston

Results of the study are being used by the Pacific Salmon Commission (PSC), the implementing arm of a treaty between the United States and Canada to facilitate fisheries planning and allocations between the two nations. A PSC grant is funding the study slated to continue through 2009.

— D. Preston

Stillaguamish Tribe Continues Derelict Gear Removal

A \$56,000 grant will allow the Stillaguamish Tribe to remove hundreds of abandoned crab pots and an unknown number of derelict gillnets from Port Susan, eliminating risks to boaters, scuba divers and numerous aquatic species.

The tribe has worked for more than two years to remove that danger. Begun in 2003, a tribal initiative has been identifying and removing derelict gear in the Port Susan area.

Now, a grant from the Russell Family Foundation will enable the tribe to finish what it started.

Removal of 281 abandoned crab pots identified by tribal studies will begin next week. Working with a local firm, Natural Resource Consultants (NRC), the tribe hopes to complete work before commercial crab season begins in July.

"The crab pots aren't as big a threat to humans as gillnets are, but we're interested in removing them to protect the ecosys-

tem," said Shawn Yanity, Stillaguamish tribal chairman. "As long as they're in the water, they're killing fish and crab."

In addition to the Stillaguamish, the Tulalip, Puyallup, and Lower Elwha Klallam tribes have worked with NRC to remove derelict gear in their traditional fishing areas.

Since the Stillaguamish do not currently have a marine fishery, the tribe is trying to clean up a dangerous mess that they did not create. Tribal officials emphasize that no part of the project is designed to blame or punish anyone. If owners of lost gear can be identified through crab pot tags or identification numbers on gillnet floats, their gear will be returned. If not, the gear can be donated to schools or other fisheries science programs.

"To us, it doesn't matter whose gear this is," said Yanity. "What matters is that removing it will benefit our natural resources — and that's in everyone's best interests." — J. Shaw

Nooksack Tribe Completes Culvert Study

Favorable ocean conditions have boosted many Pacific Northwest salmon runs over the past few years. But even the best conditions at sea won't help if fish find the way out to the ocean or their path home to the river blocked.

The Nooksack River and its tributaries contain abundant quantities of quality spawning habitat. Sadly, significant portions of the river's watershed are inaccessible to fish because failed or improperly installed culverts block access.

In late February, the Nooksack Tribe's natural resources department completed a two-year study of human-made structures in salmon streams throughout Whatcom County. In addition to identifying culverts and dams that block fish migration, tribal researchers measured salmon spawning and rearing habitat above the barriers, identifying the most important culverts to repair immediately.



Nooksack Natural Resources technicians Tom (left) and Carty Cline use a laser range finder to survey fish-blocking culverts during a tribal study of barriers to fish passage. *Photo: J. Shaw*

"One of the quickest and most cost-effective ways to restore habitat for our wild salmon is identifying and fixing fish-blocking culverts," said Bob Kelly, director of Nooksack Natural Resources (NNR). "The information we obtained through this study is a tool we can use immediately for salmon recovery."

Species harmed by barrier culverts include spring chinook salmon and bull trout, both listed as "threatened" under the federal Endangered Species Act.

Nooksack crews began cataloging potential problem areas on April 1, 2003, and examined about 700 structures along 600 miles of stream habitat over the ensuing 22 months. Most of the fish barriers turned out to be improperly installed or failing culverts, but the tribe also inventoried dams and sites where water flow had been diverted from its natural flow patterns.

"We covered many miles and inventoried a lot of structures, but still came in under budget," said Scott Rockwell, Nooksack biologist. "The remaining funds will allow us to complete a second stage of analysis, where we'll work with state and county agencies to figure out what the top priority barriers are – the problems we can begin fixing immediately."

The project has been funded through a state Salmon Recovery Funding board grant.

Staff from NNR examined fish-bearing streams that cross private land throughout Whatcom County. The tribal inventory of fish passage barriers and the tribe's surveys of habitat surrounding the blockages are both critical elements in determining restoration priorities on all three forks of the Nooksack River. Culverts that block the most high-quality habitat for species of concern in the Nooksack basin will be moved to the top of the list.

"In Washington, problem culverts block about 4,500 river miles of historic salmon habitat," said Kelly. "We're addressing these problems in the Nooksack basin, and we hope others follow our lead throughout the region." – *J. Shaw*

Northwest Indian Fisheries Commission

6730 Martin Way East
Olympia, WA 98506
(360) 438-1180

PRSRT STD
U.S. POSTAGE
PAID
MAIL NW

